

## REMARKS

This Amendment responds to the Office Action dated June 25, 2004 in which the Examiner rejected claims 1, 6, 11 and 17-35 under 35 U.S.C. § 103.

Applicant respectfully requests the Examiner acknowledges the references cited in the Information Disclosure Statement filed September 21, 2004.

Claims 1 and 17 claim a screen-printing plate and claims 6 and 24 claim a method of manufacturing an electronic device. A screen plate is provided with two or more printing patterns, each formed as a single opening on one surface of the screen plate and a plurality of mesh holes on an opposite surface of the screen plate. The plurality of mesh holes are portions through which electrode paste is passed. The single opening is a portion where the electrode paste is retained to form a single electrode pattern.

Through the structure and method of the claims having a screen plate having a single opening on one surface and a plurality of mesh holes on an opposite surface and having the mesh holes pass electrode paste therethrough while the single opening retains the electrode paste to form an electrode pattern, as claimed in claims 1, 6, 17 and 24, the claimed invention provides a screen-printing plate and method for manufacturing an electronic device having a reduced number of internal structural defects and having a uniform coating thickness. The prior art does not show, teach or suggest the invention as claimed in claims 1, 6, 17 and 24.

As indicated above, the claims have been amended to make explicit what is implicit in the claims. The amendments are unrelated to a statutory requirement for patentability.

Claims 1, 6, 33 and 35 were rejected under 35 U.S.C. §103 as being unpatentable over *Sanyal et al.* (U.S. Patent No. 4,872,261) in view of *Kamata* (Japanese Reference 6349663) and *Kehe et al.* (U.S. Patent No. 3,225,691).

*Sanyal et al.* appears to disclose method for applying solder needed for surface mounting both fine pitch leads and standard leads. (col. 4, lines 35-37) FIG. 1 illustrates a printed wiring board 10 with a number of components, generally identified by reference numbers 12 and 14, mounted thereon to form a printed wiring assembly 15. (col. 5, lines 35-38) FIGS. 2 and 3 illustrate a stepped solder stencil 30 used to apply solder paste 31 prior to the lead bonding process. The stepped solder stencil 30 has a common flat surface 32 that is positioned opposite the printed wiring board 10. The stepped soldering stencil 30 has a thick section 34, here approximately 10 mils thick, formed with openings 36 where solder is applied over the surface contact pads 20 for the conventional leads 16. The stepped solder stencil 30 also has a thin section 38, within the thick section 34, approximately 4 mils thick. The thick section 34 and thin section 38 of the stencil 30 are separated by a step 39. Formed in the thin section 38 are openings 40 through which solder is applied over the surface contact pads 22 for the fine pitch leads 18. Openings 36 have dimensions of approximately 30.times.76 mils and are spaced apart at least a 50 mil pitch, openings 40 have dimensions of approximately 10.times.50 mils and are spaced apart at an approximately a 25 mil pitch. (col. 6, lines 14-32)

Thus, *Sanyal et al.* merely discloses a stepped solder stencil 30. Nothing in *Sanyal et al.* shows, teaches or suggests a screen plate having a single opening on one surface and a plurality of mesh holes on an opposite surface as claimed in claims 1 and 6. Rather, *Sanyal et al.* merely discloses a stepped solder stencil 30.

Also, *Sanyal et al.* merely discloses a plurality of adjacently disposed patterns formed on a stencil 24. Nothing in *Sanyal et al.* shows, teaches or suggests that one printing pattern surrounds another as claimed in claims 1 and 6. Rather, *Sanyal et al.* teaches away from the claimed invention since the stencil clearly discloses adjacently disposed patterns.

Additionally, *Sanyal et al.* discloses at least two different types of patterns formed on the stencil. Nothing in *Sanyal et al.* shows, teaches or suggests that shapes of two of the printing patterns which surround each other are substantially the same as claimed in claims 1 and 6. Rather, *Sanyal et al.* teaches away from the claimed invention since the plurality of adjacently disposed patterns have different shapes.

Finally, *Sanyal et al.* merely discloses having different pitch to the openings. Nothing in *Sanyal et al.* shows, teaches or suggests the first and second mesh hole sizes are different as claimed in claims 1 and 6.

*Kamata et al.* appears to disclose a screen printing consisting of a screen play part 11, and emulsion part 12, and an impression frame part 13.

Thus, *Kamata et al.* merely discloses a frame. Nothing in *Kamata et al.* shows, teaches or suggests a) a screen plate having a single opening on one surface and a plurality of mesh holes on an opposite surface, b) the mesh holes are portions which pass electrode paste therethrough and the single opening retains the electrode paste to form an electrode pattern, c) one printing pattern surrounds another, d) the shapes of the printing patterns are substantially the same or e) different sized mesh holes of the printing patterns as claimed in claims 1 and 6.

*Kehe et al.* appears to disclose improved procedures and apparatus for depositing by a printing operation a liquid plastisol or similar gasket forming material on a coated metal blank preparatory to punching and forming closure caps from the printed blank with the gasket material properly located to form cushion seals when the caps are applied to the containers for which they are designed. Referring to FIGURES 7 to 9 of the drawings, there is illustrated a printing plate 30 constituting a further modification of the invention which is adapted for depositing a gasket forming material in a pattern which will permit variations in the thickness of the gasket, for example, a gasket configuration possessing a feather-edge or in the form of an overall liner with the thickness decreasing from a maximum at the other edges of the top panel of the cap to a minimum in the other edges of the top panel of the cap to a minimum in the inner non-sealing area of the panel. In the plate 30, which is designed for depositing gasket material to form an overall liner as well as a closure seal in the cap, the design of the gasket configuration for the printing area 31 comprises a combination of radial and circular rib formations 32 and 33 in the seal forming area with the radial ribs terminating at a perforated grid 34 in the center non-sealing area and the circular ribs extending beneath the grid 34. As shown in FIGURES 8 and 9, the top surfaces of the center grid 34 and the radial ribs or segments 32 are flush with the top face 35 of the plate 30 and are undercut by the etching process on the bottom face 36 of the plate as indicated at 37 in FIGURE 9. The circular ribs 33 have their bottom surfaces flush with the bottom face 36 of the plate 30 and are cut away on the top face 35 thereof as indicated at 38. The circular ribs 33 serve primarily as a support and reinforcement for the radial ribs 32 which separate the radial apertures 38 through which the plastisol is deposited. The areas

of the apertures 38 defined by the radial and circumferential ribs 32 and 33 decrease in the direction inwardly of the outer periphery of the printing area 31 and the circular rib formations 33 hold the material in these depositing of the gasket material. The perforated grid formation 34 in the center area results in a deposit of the gasket material which is relatively thin and substantially uniform over the area (column 5, line 42 through column 6, line 2).

Thus, *Kehe et al.* merely discloses fabricating a gasket. Nothing in *Kehe et al.* shows, teaches or suggests the method of manufacturing an electronic device as claimed in claim 6 (or claim 24). Additionally, *Kehe et al.* is merely directed to depositing a liner or gasket and is not pertinent to a screen printing plate as claimed in claim 1 (and claim 17).

Additionally, *Kehe et al.* merely discloses in Figure 7 a bottom side of a gasket printing plate for depositing gasket material. Nothing in *Kehe et al.* shows, teaches or suggests using electrode paste as claimed in claims 1 and 6 (and claims 17 and 24). Rather, since *Kehe et al.* is directed to a gasket, a liquid plastisol is disclosed.

Finally, *Kehe et al.* merely discloses the combination of radial and circular rib formations terminating at a perforated grid. Nothing in *Kehe et al.* shows, teaches or suggests a screen plate having a single opening on one surface and a plurality of mesh holes in an opposite surface or that the mesh holes are for passing electrode paste therethrough while the single opening retains the electrode paste to form an electrode pattern as claimed in claims 1 and 6 (and claims 17 and 24). Rather, *Kehe et al.* merely discloses a printing area 31 comprising a combination of radial and circular rib formations 32, 33 terminating in a perforated grid 34.

Since nothing in *Sanyal et al.*, *Kamata* or *Kehe et al.* show, teach or suggest the features as claimed in claims 1 and 6, Applicants respectfully request the Examiner withdraws the rejection to claims 1 and 6 under 35 U.S.C. § 103.

Claims 33 and 35 depend from claims 1 and 6 and recite additional features. Applicants respectfully submit that claims 33 and 35 would not have been obvious within the meaning of 35 U.S.C. 103 over *Sanyal et al.*, *Kamata*, and *Kehe et al.* at least for the reasons as set forth above. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 33 and 35 under 35 U.S.C. § 103.

Claim 11 was rejected under 35 U.S.C. §103 as being unpatentable over *Sanyal et al.* in view of *Kamata* and *Kehe et al.* and further in view of Applicants' admitted prior art. Claims 32 and 34 were rejected under 35 U.S.C. §103 as being unpatentable over *Sanyal et al.* in view of *Kamata* and *Kehe et al.* and further in view of *Comino et al.* (U.S. Patent No. 6,095,041).

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

As indicated above, since nothing in *Sanyal et al.*, *Kamata et al.* and *Kehe et al.* show, teach or suggest the primary features as claimed in claims 1 and 6, Applicants respectfully submit that the combination of the primary references with the secondary references will not overcome the deficiencies of the primary references. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 11, 32 and 34 under 35 U.S.C. §103.

Claims 17-21, 23-24, 26-29 and 31 were rejected under 35 U.S.C. §103 as being obvious over *Balog et al.* (U.S. Patent No. 5,669,970) in view of *Kehe et al.*.

*Balog et al.* appears to disclose a stencil used in applying solder paste in a desired pattern for mounting electronic components on a surface of a circuit board. (col. 1, lines 6-8) A stencil used to apply solder paste in a desired pattern for mounting electronic components on the surface of a circuit board. The stencil is made of a sheet that has holes through it in a pattern corresponding to the desired solder pattern and has a smooth upper surface. The upper surface has relieved portions in it so as to increase the friction between it and the solder paste that is squeegeed thereover with a squeegee blade. The increase in friction permits one to maintain the rolling action of the solder and good filling of stencil holes at the same time that one increases the speed of travel of the squeegee blade. (col. I, lines 30-41)

Thus, *Balog et al.* merely discloses a stencil having a plurality of patterns. Nothing in *Balog et al.* shows, teaches or suggests a screen plate having a single opening on one surface and a plurality of mesh holes on an opposite surface and the mesh holes are portions which pass electrode paste therethrough while the single opening retains the electrode paste to form a single electrode pattern as claimed in claims 17 and 24. Rather, Figure 2 of *Balog et al.* merely discloses a plurality of patterns formed on a stencil.

Also, *Balog et al.* merely discloses in Figure 2 a stencil having a plurality of patterns. Nothing in *Balog et al.* shows, teaches or suggests a) one printing pattern surrounding another, b) the shapes of the printing patterns are substantially the same and c) the aperture ratios of the mesh holes of the patterns are different as

claimed in claims 17 and 24. Rather, Figure 2 of *Balog et al.* merely discloses a plurality of patterns adjacently disposed and having the same aperture ratio.

As discussed above, *Kehe et al.* is not directed to a screen printing plate which forms an electrode pattern using electrode paste, but is directed to forming a gasket.

Since nothing in *Balog et al.* or *Kehe et al.* show, teach or suggest a screen plate having a single opening on one surface and a plurality of mesh holes on an opposite surface where the mesh holes pass electrode paste therethrough and the single opening retains the electrode paste to form an electrode pattern, as claimed in claims 17 and 24, Applicants respectfully request the Examiner withdraws the rejection to claims 17 and 24 under 35 U.S.C. § 102(b).

Claims 18-21, 23, 26-29 and 31 depend from claims 17 and 24 and recite additional features. Applicants respectfully submit that claims 18-21, 23, 26-29 and 31 would not have been obvious over *Balog et al.* and *Kehe et al.* within the meaning of 35 U.S.C. §103 at least for the reasons as set forth above. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 18-21, 23, 26-29 and 31 under 35 U.S.C. §103.

Claims 22 and 30 were rejected under 35 U.S.C. §103 as being unpatentable over *Balog et al.* in view of *Kehe et al.* and *Comino et al.* Claim 25 was rejected under 35 U.S.C. §103 as being unpatentable over *Balog et al.* in view of *Kehe et al.* and Applicants admitted prior art.

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for



reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

As indicated above, since nothing in the *Balog et al.* and *Kehe et al.* show, teach or suggest the primary features as claimed in claims 17 and 24, Applicants respectfully submit that the combination of the primary references with the secondary references will not overcome the deficiencies of the primary references. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 22, 30 and 25 under 35 U.S.C. §103.

Thus, it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is requested to contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the current set shortened statutory period, Applicants respectfully petition for an appropriate extension of time.

The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge  
our Deposit Account No. 02-4800.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

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By: 

Ellen Marcie Emas  
Registration No. 32,131

P.O. Box 1404  
Alexandria, Virginia 22313-1404  
(703) 836-6620